

## Your abstract submission has been received

Click [HERE](#) to print this page now.

**You have submitted the following abstract to the 2015 Joint Assembly. Receipt of this notice does not guarantee that your submission was accepted for the 2015 Joint Assembly. All submissions are subject to review and acceptance by the Program Committee.**

**Please note:** you may review or edit your abstract submission until the deadline of **14 January, 2015 23:59 EST/04:59 +1 GMT**.

---

### **Evidence Of Metasomatism In The Lowest Petrographic Types Inferred From A Na-, K, Rich Rim Around A LEW 86018 (L3.1) Chondrule.**

---

**Ritesh Kumar Mishra**<sup>1</sup>, Kuljeet Kaur Marhas<sup>2</sup>, Justin I Simon<sup>1</sup> and Daniel Kent Ross<sup>1,3</sup>, (1)NASA JOHNSON SPACE CENTRE, CENTRE FOR ISOTOPE COSMOCHEMISTRY AND GEOCHRONOLOGY, Houston, TX, United States, (2)Physical Research Laboratory, Planetary Science, ahmedabad, India, (3)Jacobs Technology USGS, Houston, TX, United States

#### **Abstract Text:**

Ordinary chondrites (OCs) represent the most abundant extraterrestrial materials and also record the widest range of alteration of primary, pristine minerals of early Solar system material available for study. Relatively few investigations, however, address: (1) the role of fluid alteration, and (2) the relationship between thermal metamorphism and metasomatism in OCs, issues that have been extensively studied in many other meteorite groups e.g., CV, CO, CR, and enstatite chondrites. Detailed elemental abundances profiles across individual chondrules, and mineralogical studies of Lewis Hills (LEW) 86018 (L3.1), an unequilibrated ordinary chondrite (UOC) of low petrographic type of 3.1 returned from Antarctica, provide evidence of extensive alteration of primary minerals. Some chondrules have Na-, K-, rich rims surrounded by nepheline, albite, and sodalite-like Na-, Cl-, Al-rich secondary minerals in the near vicinity within the matrices. Although, limited evidences of low temperature (~250°C) fluid-assisted alteration of primary minerals to phyllosilicates, ferroan-olivine, magnetite, and scapolite have been reported in the lowest grades (<3.2) Semarkona (LL3.00) and Bishunpur (LL3.10), alkali-rich secondary mineralization has previously only been seen in higher grade >3.4 UOCs. This preliminary result suggests highly localized metamorphism in UOCs and widens the range of alteration in UOCs and complicates classification of petrographic type and extent of thermal metamorphism or metasomatism. The work in progress will document the micro-textures, geochemistry (Ba, Ca, REE), and isotopic composition (oxygen, <sup>26</sup>Al-<sup>26</sup>Mg) of mineral phases in chondrules and adjoining objects to help us understand the formation scenario and delineate possible modes of metamorphism in UOCs.

**Topic Selection:** Non-destructive study of meteorites

**Title:** Evidence Of Metasomatism In The Lowest Petrographic Types Inferred From A Na-, K, Rich Rim Around A LEW 86018 (L3.1) Chondrule.

**Preferred Presentation Format:** Poster Requested

**Scheduling Request:** No

**Previously Published?:** No

First Presenting Author

---

#### **Presenting Author**

---

Ritesh Kumar Mishra

**Primary Email:** riteshkumarmishra@gmail.com

#### **Affiliation(s):**

NASA JOHNSON SPACE CENTRE  
CENTRE FOR ISOTOPE COSMOCHEMISTRY AND GEOCHRONOLOGY  
Houston TX (United States)

---

**Second Author**

---

Kuljeet Kaur Marhas

**Primary Email:** kkmarhas@prl.res.in

**Phone:** +9107926314331

**Affiliation(s):**

Physical Research Laboratory

Planetary Science

ahmedabad (India)

---

**Third Author**

---

Justin I Simon

**Primary Email:** justin.i.simon@nasa.gov

**Phone:** (281)244-6408

**Affiliation(s):**

NASA JOHNSON SPACE CENTRE

CENTRE FOR ISOTOPE COSMOCHEMISTRY AND GEOCHRONOLOGY

Houston TX (United States)

---

**Fourth Author**

---

Daniel Kent Ross

**Primary Email:** daniel.ross@nasa.gov

**Phone:** (281)483-1891

**Affiliation(s):**

Jacobs Technology USOGS

Houston TX 77258-8447 (United States)

NASA JOHNSON SPACE CENTRE

CENTRE FOR ISOTOPE COSMOCHEMISTRY AND GEOCHRONOLOGY

Houston TX (United States)

---

**If necessary, you can make changes to your abstract submission**

- To access your submission in the future, point your browser to: [User Portal](#)
- Your submission will be listed under **Roles in Meeting**
- Your Abstract ID# is: 33982.
- Any changes that you make will be reflected instantly in what is seen by the reviewers.

- After the abstract proposal is submitted, you are not required to go through all submission steps to make edits. For example, click the "Authors" step in the Abstract Submission Control Panel to edit the Authors and then click save or submit.  
When you have completed your submission, you may close this browser window or submit another abstract proposal: [Session Viewer](#).

When you have completed your submission, you may close this browser window.

[Tell us what you think of the abstract submission process](#)

[Home Page](#)